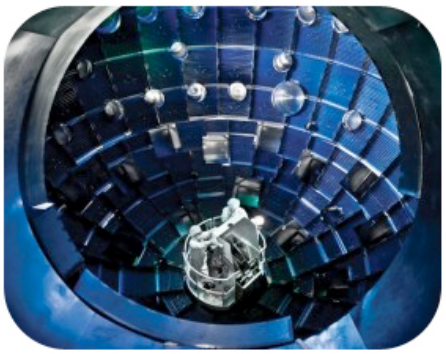
LIVERMORE LAB
REPORT

A weekly review of scientific and technological achievements from Lawrence Livermore National Laboratory, March 19-23, 2012

nature ACHIEVING A CROWN JOULE



The National Ignition Facility target chamber.

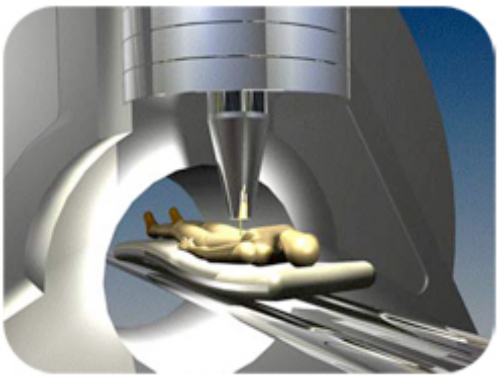
The world's largest laser has just put more zip in its boom bah.

The 192 beams of the National Ignition Facility (NIF) recently fired a record 1.875-megajoule shot into the laser's target chamber, surpassing its 1.8-megajoule design specification.

The experiment surpassed a critical milestone in its efforts to meet one of modern science's greatest challenges: achieving fusion ignition and energy gain in a laboratory setting. Ignition is scheduled for later this year.

To read more, go to *Nature*.

POPSCI PRO-ACTIVE CANCER KILLER



Compact proton radiotherapy treatment concept. Illustration by Steven Hawkins

A proton gun for killing tumors could soon be on its way to a hospital near you.

For at least a decade, doctors have been regularly treating cancer patients using proton beams, which work similarly to radiation. Proton therapy is more precise, however, causing less harm to healthy surrounding tissues.

Scientists at the Compact Particle Acceleration Corporation, which licensed its technology from Lawrence Livermore, are developing a 13-foot-long particle accelerator that costs about $30 million. Most accelerators use large magnets to generate the electromagnetic field that pushes charged particles. The magnets require 10-foot-thick concrete shielding and bulky hardware.

CPAC's prototype creates the electromagnetic field with electric lines, which don't require massive shielding or large additional equipment. The new accelerator could be commercially available as soon as 2015.

To read more go to *Popular Science*.

YAHOO! AN ARRAY OF DETECTION

LLNL biologist Crystal Jaing is shown loading a fluorescently labeled viral DNA sample onto the Lawrence Livermore Microbial Detection Array as fellow biologist James Thissen watches.

The Laboratory has licensed its microbial detection array technology to a St. Louis, Mo.-based company, MOgene LC, a supplier of DNA microarrays and instruments.

Known formally as the Lawrence Livermore Microbial Detection Array (LLMDA), the technology could enable food safety professionals, law enforcement, medical professionals and others to detect within 24 hours any virus or bacteria that has been sequenced and included among the array's probes.

Developed between October 2007 and February 2008, the LLMDA detects viruses and bacteria with the use of 388,000 probes that fit in a checkerboard pattern in the middle of a one-inch wide, three-inch long glass slide.

The current operational version of the LLMDA contains probes that can detect more than 2,200 viruses and more than 900 bacteria.

To read more, go to *Yahoo Finance*.

The Laboratory is participating in a pilot program to establish a new, more flexible contracting mechanism for companies that want to commercialize technologies developed at the Labs.

The new vehicle, called an agreement for commercializing technology (ACT), offers an alternative for industry-Lab collaborations that uses terms more typical of business-to-business agreements and cuts the red tape usually involved in Department of Energy (DOE) partnerships.

Compared with the two long-standing DOE contracting mechanisms, the ACT will enable the lab contractor to negotiate more flexible terms with its clients concerning intellectual property rights, payment arrangements and indemnification.

"What you have that's different is the contractor in its private role can construct terms with the clients that are strictly commercial, not governed by regulation or statute," said Erik Stenehjem, director of Lawrence Livermore's Industrial Partnerships Office.

The Lab expects that ACT agreements will be negotiated in a week or two, which is prompt compared with an average review time of 37 days -- and sometimes much longer -- for DOE approval of Cooperative Research and Development Agreements (CRADA)s.

To read more, go to *Physics Today*.

HPC wire ENERGY MOVING FORWARD

The Laboratory has selected six industry projects for the advancement of energy technologies using high performance computing (HPC).

Called the "hpc4energy incubator," this pilot program aims to innovate and accelerate the development of energy technology and boost U.S. economic competitiveness in the global marketplace by teaming industry with the scientific and computing resources at national laboratories.

The companies selected are: GE Energy Consulting; Robert Bosch LLC; Potter Drilling Inc.; ISO New England; United Technologies Research Center; and GE Global Research.

These companies will collaborate with LLNL scientists and use LLNL's HPC to find solutions to urgent energy-related problems and learn how to employ HPC as a powerful tool for innovation.

To read more, go to *HPC Wire*.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

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